REMARKS

I. INTRODUCTION

In response to the Office Action dated August 26, 2005, claims 1-30 have been canceled, and claims 33 and 39 have been amended. Claims 31-39 remain in the application. Entry of these amendments, and re-consideration of the application, as amended, is requested.

II. EXAMINER INTERVIEW

Reference is made to a telephonic interview between Examiner Juan A. Torres and the Applicants' Attorney, Victor G. Cooper on October 24, 2005, in which the relationship between Applicants' claimed features and the cited references were discussed. Particular emphasis was placed on the modulation map of claim 31.

III. CLAIM AMENDMENTS

Applicants' attorney has canceled claims 1-30 and have amended claims 33 and 39 to correct an error. These amendments were made solely for the purpose of simplifying issues presented for appeal, and are made with the intent of pursuing claims of similar scope in continuing applications.

IV. NON-ART REJECTIONS

On page (4) of the Office Action, claim 22 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection is moot, as claim 22 has been canceled.

On page (4) of the Office Action, claim 23 was rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection is moot, as claim 23 has been canceled

V. STATUS OF CLAIMS

Claims 31-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,039,961 to Ishio (Ishio) and further in view of U.S. Patent No. 6,297,691 to Anderson.

The Office Action indicated that claims 35 and 38 would be allowable if rewritten in independent form to include the base claim and any intervening claims. The Applicants thank the Examiner for the indication of patentable subject matter, but respectfully traverses these rejection of claims 31-34, 36, 37, and 39.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 31-39 are patentable under 35 U.S.C. § 103(a) over U.S. Patent No. 4,039,961, issued to Ishio (hereinafter, the Ishio reference) and further in view of U.S. Patent No. 6,297,691 to Anderson (hereinafter, the Anderson reference).

VII. ARGUMENTS

A. The Independent Claims Are Patentable Over The Prior Art

1. The Ishio Reference

Ishio discloses a digital carrier signal demodulation circuit that is used in the carrier digital transmission system utilizing a 16-ary APK (Amplitude and Phase Keying) signal produced by the vector superposition of a second path signal consisting of a four-phase shift keying signal upon each phase of a first path signal consisting of a four-phase shift keying signal, the level of the second path signal being lower than that of the first path signal. The received 16-ary APK signal is detected with the reference carrier extracted from the received signal, regenerated to reproduce the base band pulses of the first path signal. The recovered base band pulses remodulate the reference carrier to produce the first path signal. The phases of the recovered first path signal and received signal are compared to phase lock a voltage controlled oscillator thereby producing the reference character.

2. The Anderson Reference

Anderson discloses a receiver receives modulated message signals in non-coherent FSK and coherent 8PSK protocols. A selectively configurable processor demodulates the message signals, and includes a demodulator that derives in-phase and quadrature signals based on the message signals. A phase detector is responsive to the in-phase and quadrature signals and delayed in-phase and quadrature signals to derive a phase signal. A selector is responsive to the in-phase and quadrature signals to selectively connect a loop filter between the phase detector and the demodulator. When the selector connects the filter between the phase detector and demodulator, the demodulator is responsive to filtered phase signals to lock onto a frequency of the message signals so that the processor operates as a phase locked loop to demodulate coherent modulated signals. When the selector disconnects the filter from between the phase detector and the demodulator, the demodulator demodulates non-coherent modulated signals and the phase detector supplies a phase signal representing the slope of the phase of the demodulated signal.

3. Independent Claims 31 and 36 are Patentable Over Ishio in view of Anderson

Claim 31 recites:

An apparatus for receiving a non-coherent layered modulation signal comprised of a sum of a first layer signal and a second layer signal, the apparatus comprising:

a tuner for receiving the non-coherent layered modulation signal and producing a layered in-phase signal and a layered quadrature signal;

an analog-to-digital converter for digitizing the layered in-phase signal and the layered quadrature signal;

a processor for processing the digitized layered in-phase signal and the digitized layered quadrature signal to produce a lower layer in-phase signal and a lower layer quadrature signal, an upper layer in-phase signal and an upper layer quadrature signal, the processor comprising:

a modulation map configured to modify the upper layer in-phase signal and the upper layer quadrature signal to account for transmission distortions of the layered modulation signal to produce an ideal upper layer in-phase signal and an ideal upper layer quadrature signal; and

a subtractor configured to subtract the ideal upper layer in-phase signal from the digitized layered in-phase signal to produce the lower layer in-phase signal and to subtract the ideal upper layer quadrature signal from the digitized layered quadrature signal to produce the lower layer quadrature signal;

a digital-to-analog converter for converting the lower layer in-phase signal and the lower layer quadrature signal to a lower layer in-phase analog signal and a lower layer quadrature analog signal; and

a modulator for modulating the lower layer in-phase analog signal and the lower layer quadrature analog signal to produce a single layer signal.

a) Even when Combined, Ishio and Anderson Do Not Teach All of the Features of Claim 1

(1) Ishio and Anderson Both Fail to Teach a Modulation Map

Claim 1 recites "a modulation map, configured to modify the upper layer in-phase signal and the upper layer quadrature signal to account for transmission distortions of the layered modulation signal." According to the Final Office Action, this is disclosed by the "Remodulation Circuit 21" shown in FIG. 5 below and in the associated text:

FIRST EMBODIMENT, FIG. 5

Referring to FIG. 5, the first embodiment of a demodulation circuit in accordance with the present invention will be described. The input 16-ary APK signal is applied from an input terminal 14 to a four-phase signal detection circuit 16 in a carrier recovery circuit 15 (a block indicated by the dotted lines) to be coherently detected with the reference carriers of the X-and Y-axes phase shown in FIG. 4 which is produced by a voltage controlled oscillator 17. The detected output is discriminated by a regeneration circuit 18 in order to detect the quadrant in which the signal vector is present (See FIG. 4), and the outputs derived from output terminals 19 and 20 correspond to the base band pulses applied to the input terminals ch1 and ch2 shown in FIG. 3.

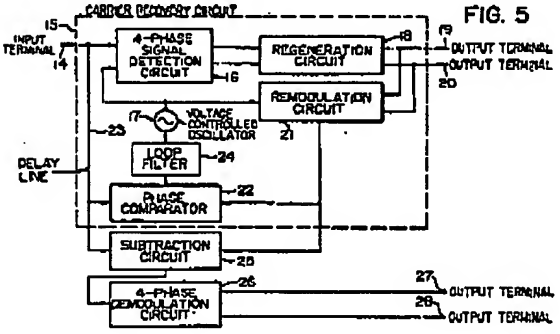

FIG. 5

The outputs from the regeneration circuit 18 are also applied to a re-modulation circuit 21 in order to modulate the reference carrier from the oscillator 17 into the four-phase modulated signal corresponding to the signal vector indicated by the solid line segment in FIG. 4. That is, the first path signal is regenerated. The first path signal is applied to a phase comparator 22, to which is also applied the input signal which has been delayed by a delay line 23 by a time equal to the signal transmission delay time from the input terminal to the output of the re-modulation circuit 21. The output from the phase comparator 22 which compares the phase between the first pulse signal and the input signal from the input terminal 14, is applied through a loop filter 24 to the oscillator 17 as the control voltage. Since one of the two input signals applied to the phase comparator 22 is the first path signal while the other, the resultant or sum signal of the addition of the first and second path signal vectors, their amplitudes and phases are not exactly coincident, but the second path signal may be considered as an interference signal to the first path signal so that when the difference in level between the first and second path signals is suitably selected, the satisfactory operation of the loop controlling the oscillator 17 may be ensured.

The output from the re-modulation circuit 21 is also applied to a subtraction circuit 25 where it is vectorially subtracted from the input signal from the input terminal 14. The output from the subtraction circuit 25 is the second path signal corresponding to the signal vector indicated by the dotted line segment in FIG. 4. The second path signal is applied to a four-phase demodulation circuit 26 so that the four-phase PSK signal corresponding to the base band pulses applied to the input terminals ch3 and ch4 (see FIG. 3) may be derived from output terminals 27 and 28.

The Applicants respectfully disagree. The foregoing discloses is a "remodulation circuit 21" that remodulates the signal present at the output terminals (19, 20). No mention is made of

anything analogous to any element that *modifies the upper layer in-phase signal and the upper layer quadrature signal to account for transmission distortions of the layered modulation signal,* let alone a *modulation map.* It's absence is plain from inspection.

In the telephonic interview held October 25, 2005, it was suggested that a modulation map may be inherent to the Ishio disclosure. If that is the nature of the rejection, the Applicants respectfully disagree.

Inherency "may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991). Instead, to establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co.*, 948 F.2d at 1268.

Nothing in any of the cited references justifies a conclusion that a "modulation map for modifying the upper layer in-phase signal and the upper layer quadrature signal to account for transmission distortions of the layered modulation signal" is *necessarily present* in the Ishio reference. Nor would one of ordinary skill in the art consider it to be necessary. There are many ways by which signal transmission errors can be accounted for, including (1) signal coding, as described in col. 3, line 28 - col. 4, line 4 of U.S. Patent 5,966,412 (considered by the Examiner on March 29, 2005) and (2) predistortion of the transmitted signal, as described in "Adaptive Linearization of Power Amplifiers in Digital Radio Systems," by Saleh et al. (also considered by the Examiner on March 29, 2005).

Although the Office Action does not reject claim 31 on the basis that it would be obvious to modify Ishio and Anderson (this would be a new grounds for rejection and would require a non-final Office Action), the Applicants point out that such a rejection would be improper as well for the same reasons. Further, even if transmission distortions were not sufficiently ameliorated by coding schemes or better handled via the transmitted signal as taught by Saleh (and no evidence has been presented that this is the case), the question remains as to why one of ordinary skill in the art would have modified the *reconstructed* upper layer signal rather than modifying the received signal *before* demodulation, and subtracting the remodulated signal from that modified received signal, and also

why a modulation *map* would be used. To maintain a prima facie rejection under 35 U.S.C. § 103, there must not only be some teaching to modify the references not only to do what the Applicants have done, but in *how* they have done it, because how they have done it is recited in the claim itself.

(2) Ishio and Anderson Both Fail to Teach and A/D Converter Digitizing Layered In Phase Signal and Layered Quadrature Signal

The Final Office Action indicates that the Applicants' " *analog-to-digital converter for digitizing the layered in-phase signal and the layered quadrature signal* is disclosed by block 18 of FIG. 5 above and in column 4, lines 3-52 of the Ishio reference (both reproduced above). The Applicants respectfully disagree, as the reference does mention an A/D converter.

(3) Ishio and Anderson Both Fail to Teach a Modulator for Modulating the Lower Layer Analog Signal and the Lower Layer Quadrature Signal

The Final Office Action indicates that the Applicants' *modulator for modulating the lower layer in-phase analog signal and the lower layer quadrature analog signal to produce a single layer signal*" is disclosed by the "remodulation circuit 21" of the Ishio reference.

While it is true that block 21 discloses a "remodulator", which modulates an input signal, it does not modulate *the lower layer in-phase analog signal and the lower layer quadrature analog signal to produce a single layer signal* as recited in claim 31 ... it remodulates the upper layer signal. It is difficult to see how the "remodulation circuit 21" could reasonably be said to disclose both the "modulation map" that provides the ideal upper layer signal and modulated lower layer signals as well.

b) There is no Teaching to Modify Ishio as Taught by Anderson

The First Office Action suggested that the motivation to modify Ishio was to "demodulate coherence and non-coherence signals reducing the cost of the decoder and to have compatibility with other systems" to offer compatibility with other systems.

However, communications systems engineers do not typically design receivers to include features that are not wanted or needed just for purposes of compatibility with other systems, unless there is some suggestion that the benefits of such compatibility outweigh the additional cost and complexity.

The Final Office Action further argues that

> "The coherent and non-coherent of a signal is independent of the use of layered modulation. Ishio presents a case of coherent signals for simplification, but the coherent of the signals is not important in his patent, in fact he only mentions that one time. Ishio never discloses that his invention is not applicable to non-coherent signals."

The Applicants answer each statement as follows:

The Coherence and Non-Coherence of a Signal is Independent of the Use of Layered Modulation: This appears to be either (a) argues that is *possible* to receive a layered modulation signal having non-coherent layers, or (b) argues that it is well known to receive a layered modulation signal having non-coherent layers.

If (a) applies, the statement is not relevant to the issue of whether the Applicants' claims are patentable over the prior art. It is, of course, possible to do so, or the Applicants' invention would lack utility under 35 U.S.C. § 101.

If (b) applies, the Applicants respectfully traverse, and in accordance with MPEP 2144.03, request that the Examiner produce evidence supporting this contention. Prior to conception of their invention, the Applicants know of no system that receives a layered modulation signal having two non-coherently layered signals (an upper layer signal non coherently layered with a lower layer signal) to produce both the received upper and lower layer signals.

Ishio Presents a Case of Coherent Signals for Simplification, but the Coherence of the Signals is Unimportant: The Applicants' respectfully suggest that this is a statement made in hindsight, and hindsight is impermissible in determining the Applicants' claims. The Applicants also disagree that the coherency of the signals is a mere "simplification" or that it is "unimportant" to Ishio.

Ishio Never Discloses that His Invention is Not Applicable to Non-Coherent Signals: This, of course, is not the law of obviousness.

Claim 36 recites the step of modifying the upper layer in phase signal and the upper layer quadrature signal to account for transmission distortions of the layered modulation signal. The Applicants respectfully traverse the rejection of claim 36 for the same reasons as claim 31.

B. Dependent Claims 33 and 39 are Patentable Over The Prior Art

Dependent claims 33 and 39 recite that the upper layer signal is a legacy signal. The Final Office Action indicates that this is disclosed by the output terminals (19,20) of FIG. 5 and the same text as reproduced above, but plainly, Ishio says nothing about legacy or non-legacy signals. Anderson discusses the handling of legacy and non-legacy signals, but teaches that the two should be received by entirely different demodulators, not using non-coherently layered modulation. Anderson, therefore teaches away from the Applicants' invention.

VIII. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

GATES & COOPER LLP
Attorneys for Applicant(s)

Howard Hughes Center
6701 Center Drive West, Suite 1050
Los Angeles, California 90045
(310) 641-8797

Date: October 26, 2005

By: _____
Name: Victor G. Cooper
Reg. No.: 39,641

VGC/bjs

G&C 109.64-US-01